

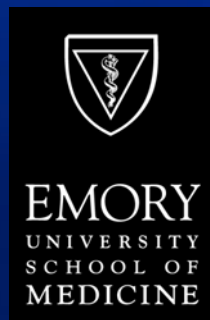
# Achieving and Maintaining Polio Eradication

Polio Immunization: Moving Forward  
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**Walter A. Orenstein, M.D.**

Professor of Medicine and Pediatrics  
Director, Emory Vaccine Policy and Development  
Associate Director, Emory Vaccine Center



# **Polio Eradication**

## **The Good News**

**1988 – 350,000 cases, 125 endemic countries**

**2006 – 2000 cases, 4 countries never eliminated polio**

**Last Type 2 – 1999**

**Type 1 reduced by >90% in Nigeria**

**Outbreaks from 2005-2006 imported cases stopped in 11 of 16 countries**

**Wild Type 1 virtually eliminated in Western Uttar Pradesh using mOPV1 campaigns**

# Polio Eradication

## The Bad News

4 countries continuously endemic

Cases reported in 5 other African countries in 2007

Cases reported in Myanmar in 2007

96% of polio cases in India in 2007 as of 7 July with  $\geq 4$  doses of OPV by history

With mOPV1 campaigns in Western UP, Type 3 resurgent

cVDPV type 2 outbreak now in Nigeria

cVDPV type 1 outbreak in Myanmar

# Can Wild Virus Polio be Eradicated?

**YES – but major challenges**

- Improving quality of SIAs especially in Africa
- Overcoming resistance to vaccination
- Achieving high vaccine coverage in high risk areas including those in conflict
- Overcoming high rates of vaccine failure in India
- Polio eliminated in difficult reservoirs – Egypt, Bangladesh, southern Nigeria, most of India and Pakistan

# Promising Developments

- mOPV1
- mOPV3
- Type 1 may be eliminated in Western UP – i.e., vaccine failure can be overcome
- High rates of vaccination, low rates of refusal encountered in Uttar Pradesh

# What else is needed?

- Biggest problem is not technical but social, behavioral, managerial, and political – delivering of vaccine to all in need, early in life
- Evaluation of impact of higher potency mOPV1 – can immunogenicity be improved
- Use of IPV in mass campaigns in high risk areas of India
  - Boosts OPV primed persons
  - Primes and boosts others
  - Induces pharyngeal immunity
  - Induces some gut immunity
  - Good immunogenicity against Type 3

# What happens if polio eradication is achieved?

- Continued OPV use, risks development of cVDPVs with phenotypic characteristics of wild virus
- At least 10 outbreaks of cVDPV reported
- Major risk factor low OPV coverage
- Without polio, OPV3 routine coverage now leads to cVDPV and risk may increase as coverage decreases
- Infrastructure needed to control such outbreaks likely to deteriorate
- OPV causes VAPP

Therefore, OPV use should stop post-eradication

# How should OPV be stopped?

- If greatest risk of cVDPV is low coverage, OPV should be stopped when world immunization coverage is at a peak
- Stopping OPV should not be a country-by-country decision

Ideally, there would be NIDs in all countries using OPV and then stop

If not, stopping should be coordinated by land mass – e.g., continent



# **What are the risks post-OPV stoppage?**

- **Emergence of unrecognized wild virus transmission**
- **Emergence of cVDPV**
- **Reintroduction of wild viruses – e.g., laboratory escape or intentional**
- **Reintroduction of vaccine viruses**
- **iVDPV excretors**
- **Greater the time without polio, lower the chances of reintroduction but the greater consequences of a reintroduction**

# Buying insurance in the post-eradication era - I

- OPV stockpiles
- Routine use of IPV – universal or targeted
- Questions to be answered
  - Will price be low enough to be economically feasible?
  - Who will pay?
  - If not, can fewer doses or fractional doses achieve adequate immunogenicity and make it economically feasible?
  - Can IPV lead to herd immunity in a tropical setting with poor hygiene?

# **Buying insurance in the post-eradication era - II**

- **Questions to be answered (con't)**
  - **Can high enough levels of routine coverage with IPV be achieved to induce herd immunity?**
  - **Is individual protection a sufficient reason to devote resources to IPV after polio is eradicated?**